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Agilent Ref: 10010116-1
United States Application Serial No. 10/632,600**REMARKS**

In view of the following remarks, the Examiner is requested to withdraw the rejections and allow Claims 1-39, the only claims pending and currently under examination in this application.

Claims 1-39 have been rejected under 35 U.S.C. § 103(a) as being obvious over Miller (U.S. Patent No. 5,418,136) in view of Ronay et al. (U.S. Patent No. 5,968,280). In making this rejection, the Examiner asserts that Miller teaches all of the elements of the claimed invention, including motivation to provide a laser scribed glass substrate that is free of particles, but does not teach how to remove particles. The Examiner looks to Ronay for a teaching of how to remove particles, and in view of Ronay's teaching the Examiner asserts that the claimed invention is obvious.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. In re Fine, 5 USPQ2d 1596 (Fed. Cir. 1988); In re Jones, 21 USPQ2d 1941 (Fed. Cir. 1992). Second, there must be a reasonable expectation of success. In re Merck & Co., Inc., 231 USPQ 375 (Fed. Cir. 1986). Finally, the prior art reference, or references when combined, must teach or suggest all the claim limitations. In re Royka, 180 USPQ 580 (CCPA 1974). The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. In re Vaeck, 20 USPQ2d 1438 (Fed. Cir. 1991).

Elements of the claims include the steps of providing a fluid comprising insoluble particulates. As such, in the provided fluid, the particulates remain in solid form within the fluid.

Ronay describes a cleaning composition which contains a polyelectrolyte for cleaning a surface of a semiconductor wafer. Ronay discloses that a polyelectrolyte is a substance that contains polyions that are "soluble in polar solvents" [col. 2, line

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50]. The solvents disclosed by Ronay are:

The compositions employed are preferably aqueous composition. Other types of suitable compositions include those using as the diluent organic solvents such as propylene carbonate and mono and polyhydric alcohols such as methanol, ethanol, ethylene glycol and glycerol, of course, mixtures of these diluents as well as mixtures with water can be used when desired.

Col. 4, lines 2 to 9.

These solvents are polar solvents.

As such, Ronay does not teach a composition that is a fluid comprising insoluble particulates. Instead, Ronay teaches a composition in which the polyelectrolytes are dissolved in a polar solvent. By disclosing a list of polar solvents and polyelectrolytes that are soluble therein, Ronay in fact teaches away from a fluid comprising insoluble particulates.

In making the rejection, the Examiner states on Page 9, paragraph 13, that:

13. Applicants argue that Ronay does not teach a fluid comprising insoluble synthetic polymer. Applicants correctly state that Ronay teaches that the polyelectrolytes are soluble in polar solvents. Since Ronay does not state the polyelectrolytes are soluble in non-polar solvents, Ronay implies that the polyelectrolytes are insoluble in non-polar solvents. Therefore, in non-polar solvents, Ronay meets the claim language because they are insoluble particles in non-polar solvents.

However, as shown above, Ronay teaches polar solvents and polyelectrolytes that are soluble in polar solvents. There is no mention of non-polar solvents, and no implication that non-polar solvents are suitable. In fact, by only listing polar solvents, Ronay is teaching that one should only use polar solvents and that the fluids employed should not have any undissolved particles therein.

Accordingly, Miller in view of Ronay does not teach or suggest a method that includes a step of providing a fluid comprising insoluble particulates. Therefore,

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Claims 1-39 are not obvious under 35 U.S.C. § 103(a) over Miller in view of Ronay and this rejection may be withdrawn.

Claims 1-39 have been rejected under 35 U.S.C. § 103(a) as being obvious over Miller in view of Kodera (JP 58048682 A). In making this rejection, the Examiner asserts that Miller teaches all of the elements of the claimed invention, including motivation to provide a laser scribed glass substrate that is free of particles, but does not teach how to remove particles. The Examiner looks to Kodera for a teaching of how to remove particles, and in view of Kodera's teaching the Examiner asserts that the claimed invention is obvious.

With respect to Kodera, it is believed that all that is available for consideration of this reference is the English abstract, a copy of which is included with this response. The English abstract teaches a method of removing a stain that is chemically bonded or diffused in a material. The term "stain" is defined by the Merriam-Webster online dictionary as:

- 1 : to suffuse with color
- 2 : DISCOLOR, SOIL
- 3 a : Taint 3 <a conscience stained with guilt> b : to bring discredit on <the scandal stained his reputation>
- 4 : to color (as wood, glass, or cloth) by processes affecting chemically or otherwise the material itself

None of the above definitions would equate a stain with particles on a surface, much less particles resulting from laser scribing. As such, contrary to the Examiner's assertion in making this rejection, Kodera does not teach a method of removing particles from a substrate surface. Since Kodera does not teach a method of removing particles from a surface, one would not be motivated to modify Miller to employ Kodera's process to remove laser scribed particles.

Accordingly, Claims 1-39 are not obvious under 35 U.S.C. § 103(a) over Miller in view of Kodera and this rejection may be withdrawn.

Claims 1-2, 4-6, 9-12, 14, 19, 21, 32 and 37-39 have been rejected under 35

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U.S.C. § 103(a) over Taylor in view of Vernon. In making this rejection, the Examiner reasons that it would be obvious to modify the method Taylor with the "washing" step of Vernon and change the order of the steps around to arrive at the claimed method.

However, the Applicants submit that a *prima facie* case of obviousness cannot be established because one of skill in the art would not find it obvious to modify Taylor's method to include a fluid, as taught by Vernon.

Taylor's method employs glass or metal beads which are placed into a basket with a semiconductor die and mechanically mixed to remove the debris and slag. In other words, Taylor's beads are directly placed on the die without a fluid.

As such, Taylor discloses a dry method in which beads are mechanically mixed with the substrate in a basket. According to Taylor's disclosure:

"the slag and droplets are formed in the molten state...and adhere tenaciously to the die surfaces, ...and cannot be effectively removed by the normal die operations used to remove chips and loose particles such as washing in ultrasonically agitated distilled water" (col. 2, lines 18-23).

As evident from above, Taylor specifically teaches that methods of ultrasonically agitating distilled water are ineffective at removing particles and debris. As such, Taylor teaches away from employing such methods.

In addition, one would read the disclosure of Taylor as teaching that the operation of Taylor's method relies on the particles contacting the substrate in a dry environment. If a fluid were present, the contact force of the particles with the substrate would be diminished because of the buffering effect of the fluid and therefore potentially not work as well. As such, one would read Taylor as requiring the contact of the particles with the substrate occur in a dry environment.

Therefore, one of skill in the art, from reading Taylor, would not be motivated to combine Taylor's method of removing debris to include ultrasonic agitation in

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deionized water as taught by Vernon.

Additionally, one of skill in the art would not be motivated to modify Taylor's method to include ultrasonic agitation in deionized water as taught by Vernon because Taylor's method would be rendered unsatisfactory for its intended purpose.¹

According to Taylor's disclosure, the surfaces of the die are cleaned of debris and slag which then falls through the wire mesh of the basket:

Another fundamental aspect of the invention resides in the use of a wire mesh cylinder in which the openings in the wire mesh are sized so as to retain the die and beads inside the cylinder while allowing the removed particles of slag and debris to fall away through the wire mesh of the cylinder. The irregularly shaped and abrasive pieces of slag and debris are thus separated from the die and beads as they mix and tumble together and are therefore prevented from scratching or marring the surfaces of the die (col. 2, lines 31-40).

However, if Taylor were modified to include a fluid as suggested by the Examiner, then Taylor would be required to use a solid basket instead of a wire mesh basket. However, the wire mesh basket is an integral component of Taylor's invention. By employing a solid basket, Taylor's method would be rendered unsatisfactory for its intended use because there would be no openings for the slag and debris to fall through during the mixing process. Without such openings, the slag and debris would not be separated and would result in the scratching and marring of the substrate surface.

The Examiner attempts to discount the above reasoning by asserting that Taylor implies a collection unit, and that it would be obvious to make the collection unit large enough to hold the basket so that the process could be performed in a fluid. It is respectfully submitted that there is no express teaching of a collection unit, much less one that is big enough to hold the basket in a fluid. The only motivation for doing such a modification is the Applicants' own specification, which is not a suitable

¹ The MPEP § 2143.01 clearly states that if the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification.

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motivation for the Office to employ.

In view of the foregoing discussion, a *prima facie* case of obviousness cannot be established because one of skill in the art would not be motivated to combine Taylor's dry method of removing slag and debris to include a fluid as taught by Vernon. Accordingly, Claims 1-2, 4-6, 9-12, 14, 19, 21, 32 and 37-39 are not obvious under 35 U.S.C. § 103(a) over Taylor in view of Vernon and this rejection may be withdrawn.

Claim 7 has been rejected under 35 U.S.C. § 103(a) as being obvious over Taylor in view of Vernon as applied to Claim 1 and in further view of Dalton et al. As Claim 7 depends from independent Claim 1 and as Dalton was cited merely for teaching the frequency of 80 kHz, the Applicants submit that Claim 7 is patentable over the cited references for at least the reasons described above. Accordingly, this rejection may be withdrawn.

Claim 8 has been rejected under 35 U.S.C. § 103(a) as being obvious over Taylor in view of Vernon as applied to Claim 1 and in further view of Rupe et al. As Claim 8 depends from independent Claim 1 and as Rupe was cited merely for teaching particulates having the same specific gravity as the fluid, the Applicants submit that Claim 8 is patentable over the cited references for at least the reasons described above. Accordingly, this rejection may be withdrawn.

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CONCLUSION

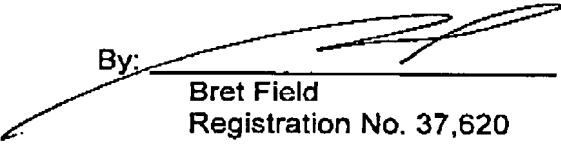
The Applicants submit that all of the claims are in condition for allowance, which action is requested. If the Examiner finds that a telephone conference would expedite the prosecution of this application, the Examiner is invited to telephone Bret Field at (650) 327-3400.

The Commissioner is hereby authorized to charge any underpayment of fees associated with this communication, including any necessary fees for extensions of time, or credit any overpayment to Deposit Account No. 50-1078.

Respectfully submitted,

Date: April 23, 2007

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CLEANING METHOD

Patent Number: JP58048682
Publication date: 1983-03-22
Inventor(s): KODERA KOUICHI; others: 01
Applicant(s): MATSUSHITA DENKI SANGYO KK
Requested Patent: JP58048682
Application Number: JP19810147624 19810917.
Priority Number(s):
IPC Classification: C23G5/00; B08B3/08
EC Classification:
Equivalents: JP1429781C, JP60044397B

Abstract

PURPOSE: To remove a stain bonded chemically or diffused in a material to be cleaned in a short time by subjecting the material to ultrasonic cleaning in a prescribed cleaning soln. contg. suspended fine SiO₂ particles having a prescribed particle size.

CONSTITUTION: Fine SiO₂ particles having <=50nm particle size are suspended in fuming sulfuric acid, fuming nitric acid or an org. solvent such as acetone or trichlene as a cleaning soln. A material to be cleaned is subjected to ultrasonic cleaning in the cleaning soln. contg. the fine SiO₂ particles. The particles hit on the surface of the material and remove the stained layer without deteriorating the surface properties. Thus, the stain bonded chemically or diffused in the material is removed in a short time.

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